

# VIRTUAL UTILITY SYSTEM

1/1

100

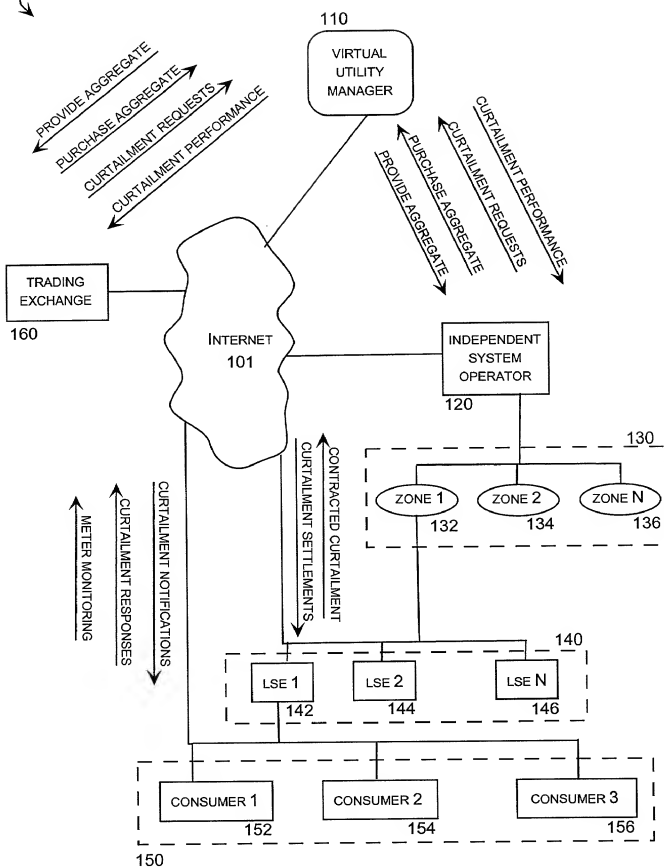


FIG. 1

2/2

200 DISPATCH SYSTEM

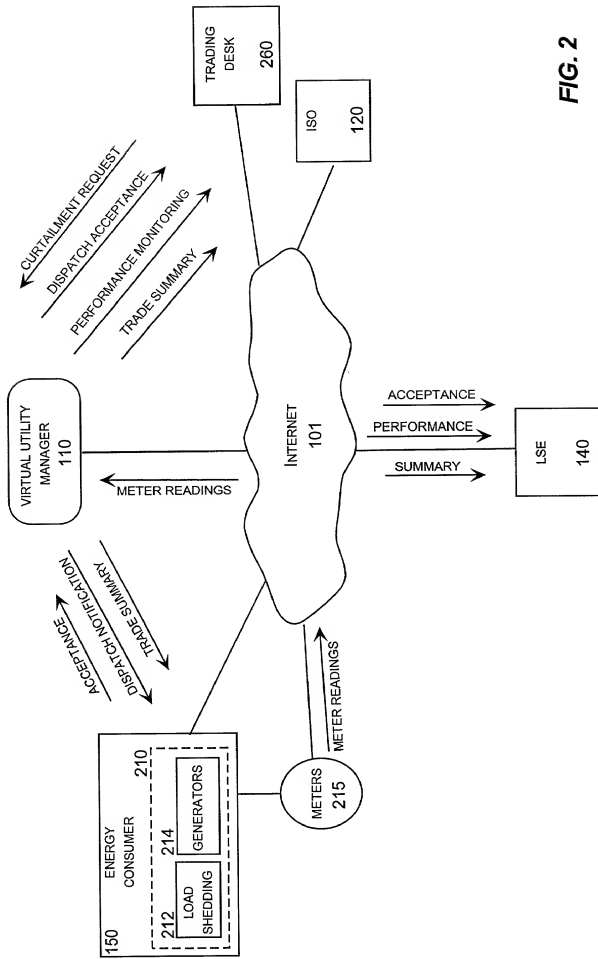


FIG. 2

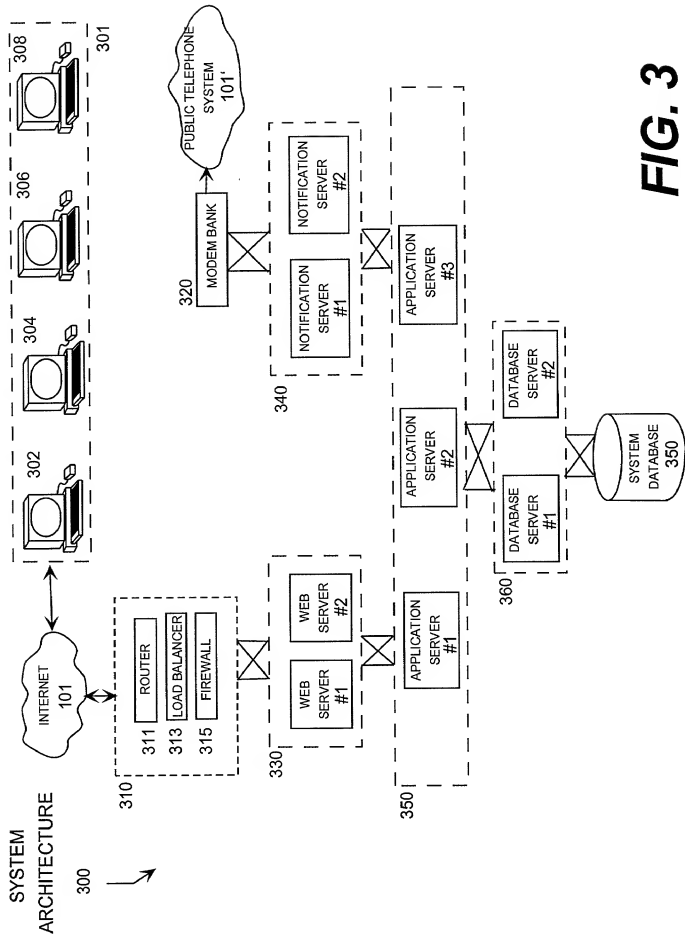


FIG. 3

# VUM SOFTWARE ARCHITECTURE

4/4

400 ↗

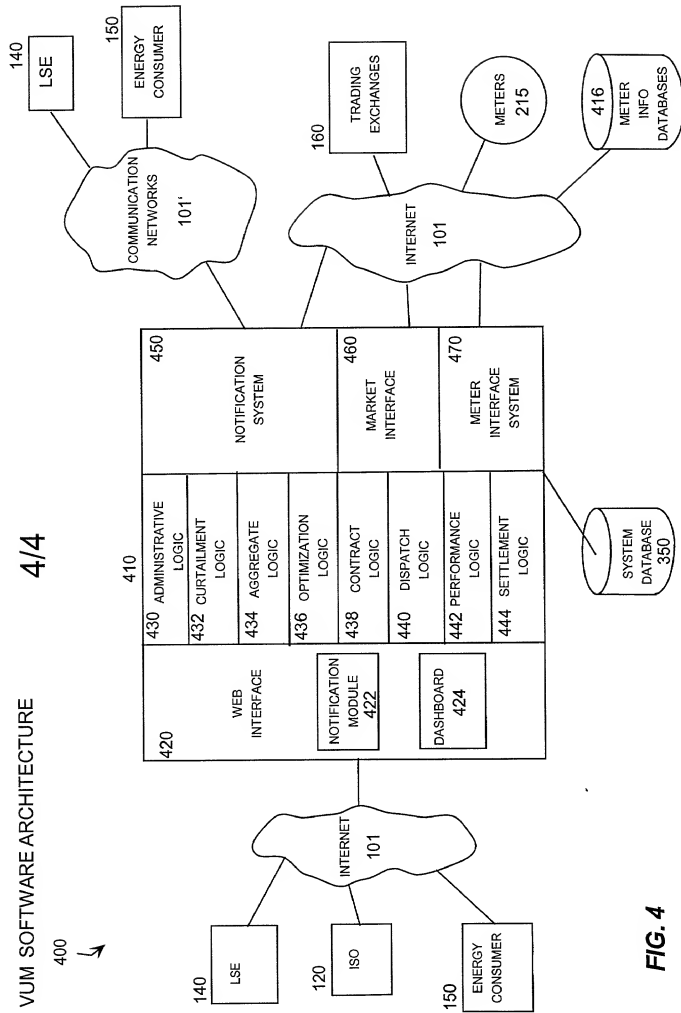


FIG. 4

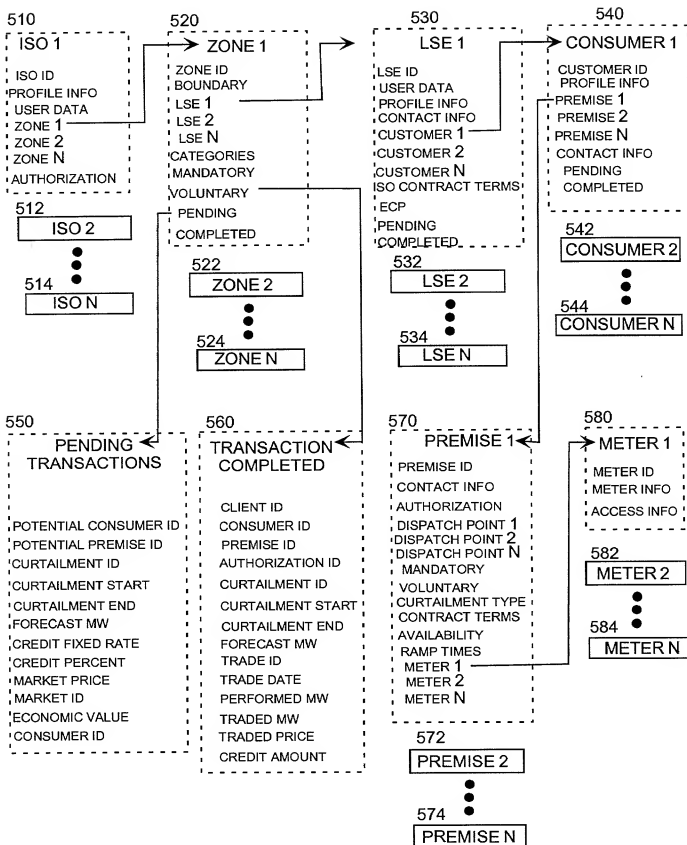


FIG. 5

# BASIC MESSAGE FORMATS

6/20

ISO/VUM

410

## NOTIFICATION REQUEST

LSE ID  
USER NAME  
PASSWORD  
LSE ID  
PREMISE ID  
CURTAILMENT ID  
CURTAILMENT PERIOD START  
CURTAILMENT PERIOD END  
ECP

VUM/ISO

420

## CURTAILMENT AVAILABILITY

ZONE ID  
PREMISE ID  
MANDATORY  
VOLUNTARY  
ECP  
LEAD NOTIFICATION  
LOAD SHEDDING  
DIESEL GENERATION  
AVAILABILITY  
PERFORMANCE HISTORY

LSE/VUM

430

## AUTHORIZATION

LSE ID  
CONSUMER ID  
PREMISE ID  
USER NAME  
USER PASSWORD  
CURTAILMENT ID  
AUTHORIZATION CODE

VUM/LSE 440

## TRANSACTION SUMMARY

LSE ID  
CURTAILMENT ID  
CONSUMER ID  
ACTUAL CURTAILMENT  
MW PERFORMED  
SETTLEMENT

VUM/CONSUMER 450

## NOTIFICATION REQUEST

LSE ID  
PREMISE ID  
CURTAILMENT ID  
CURTAILMENT PERIOD START  
CURTAILMENT PERIOD END  
RESPONSE TIME  
ECP  
ESTIMATED REMITTANCE

CONSUMER/VUM

460

## AUTHORIZATION

LSE ID  
CONSUMER ID  
PREMISE ID  
CONSUMER USER NAME  
CONSUMER USER PASSWORD  
CURTAILMENT ID  
AUTHORIZATION CODE

METER/VUM

470

## METER READINGS

METER ID  
DATE  
USAGE 1  
TIME 1  
USAGE 2  
TIME 2  
USAGE N  
TIME N

VUM/METER

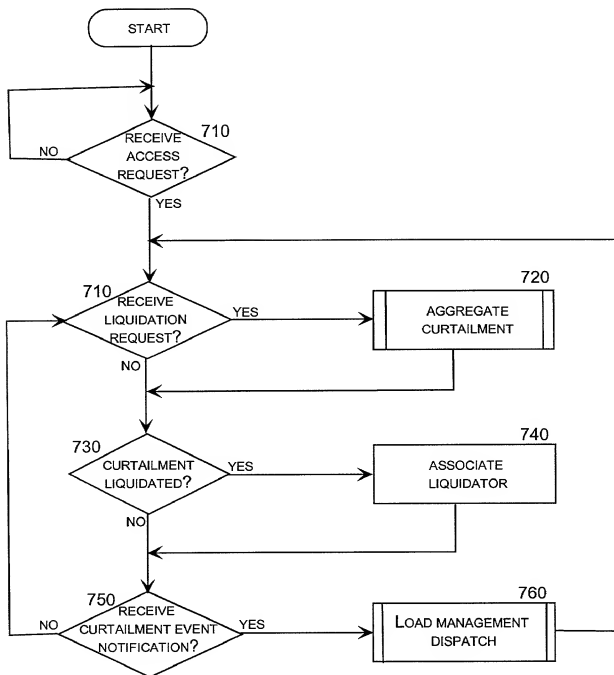
480

## METER REQUEST

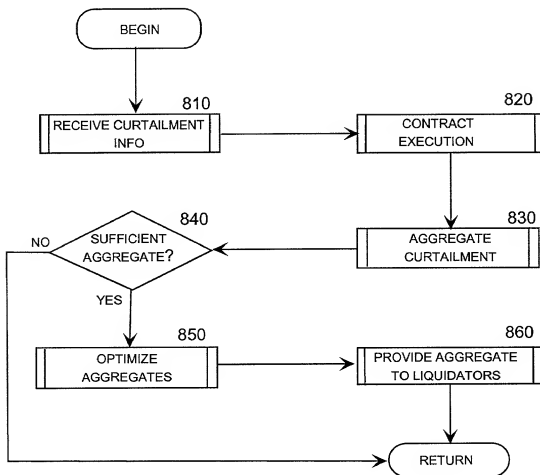
DATA BASE USER ID  
DATABASE PASSWORD  
METER ID  
METER DESTINATION  
DATE  
TIME FRAME

FIG. 6

700

**FIG. 7**

720

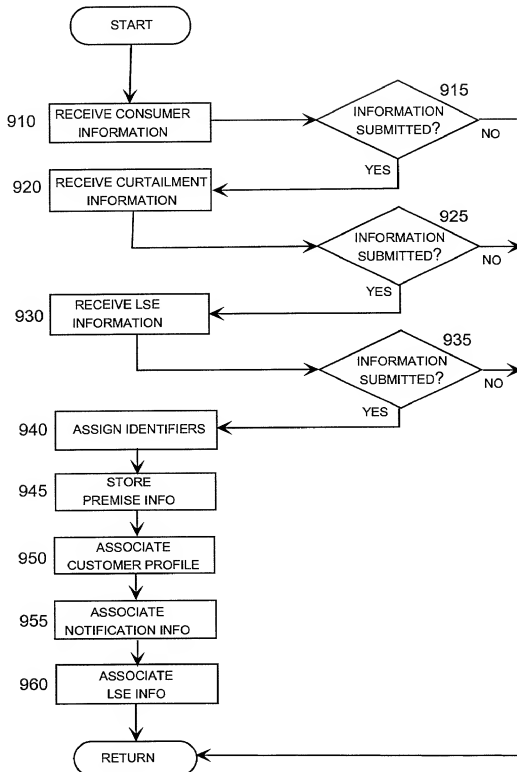


**FIG. 8**

# CURTAILMENT INFORMATION ROUTINE

9/20

810



**FIG. 9**

0954852-091801

820  
↙

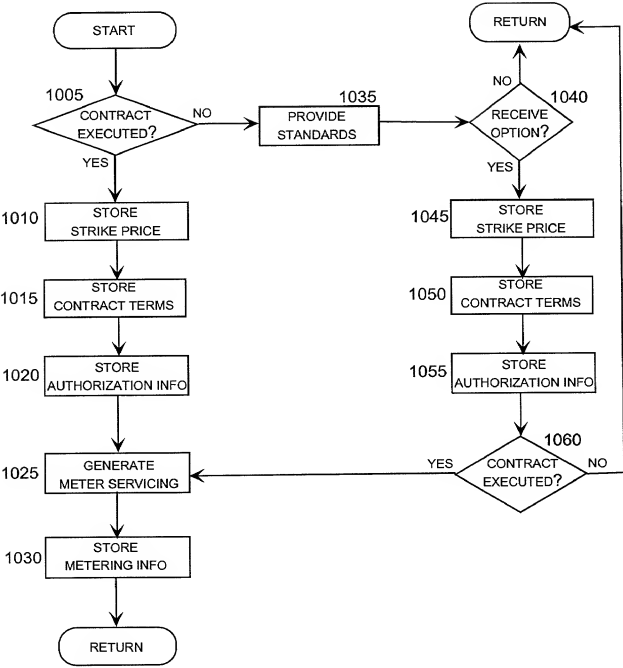


FIG. 10

11/20

CURTAILMENT AGGREGATE  
ROUTINE

830

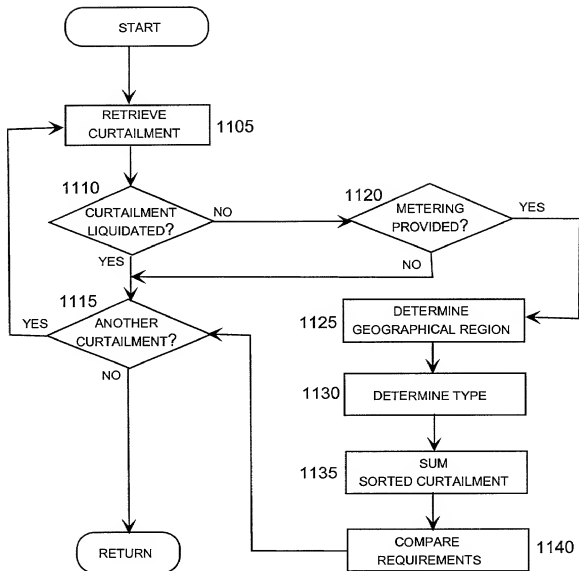
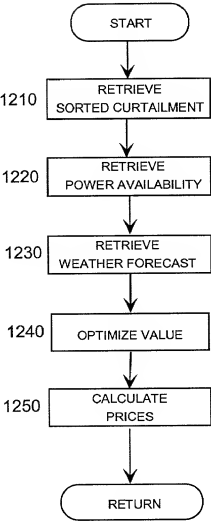


FIG. 11

850  
↙



00054852.001801

860  
↓

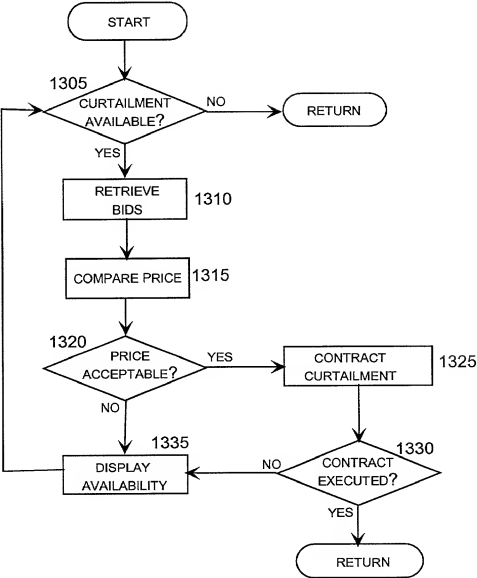
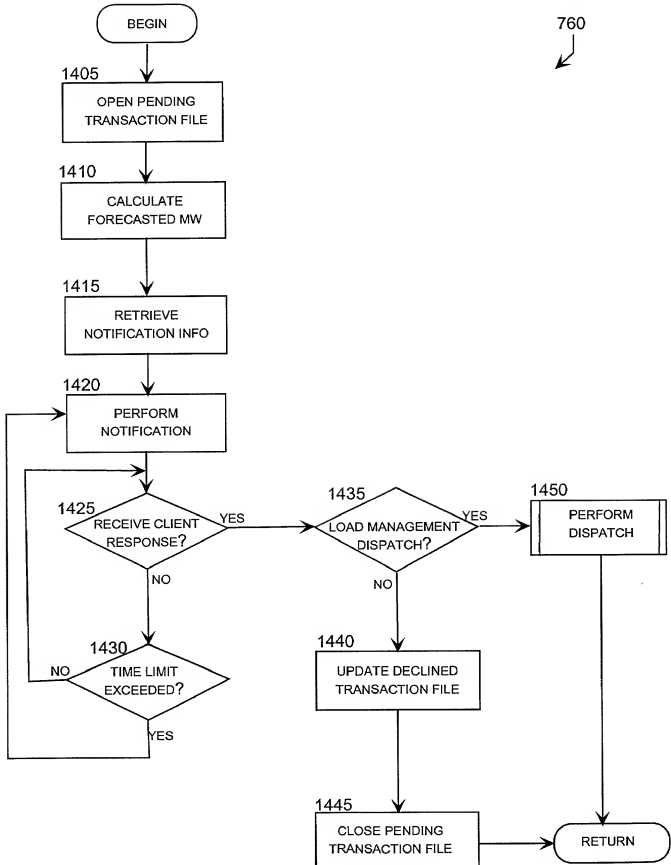


FIG. 13

14/20

# LOAD MANAGEMENT DISPATCH ROUTINE

760



**FIG. 14**

0051652-01001

1450

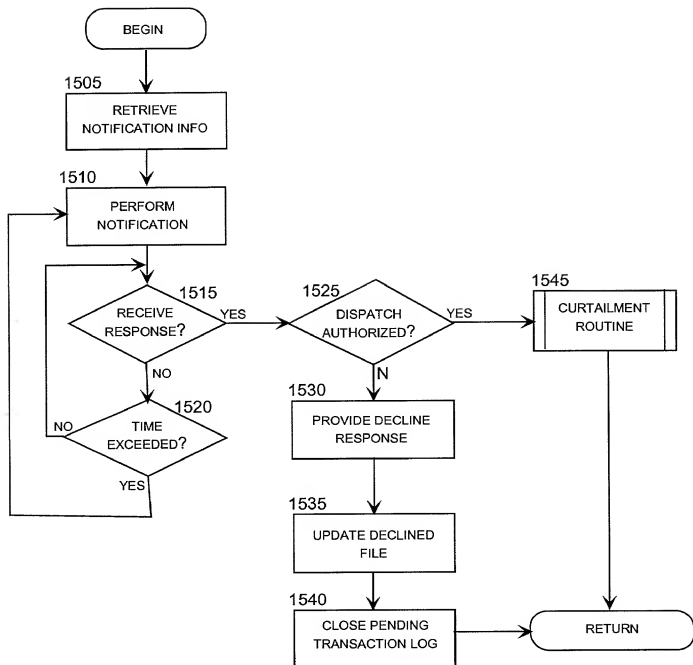


FIG. 15

16/20

## CURTAILMENT ROUTINE

1545

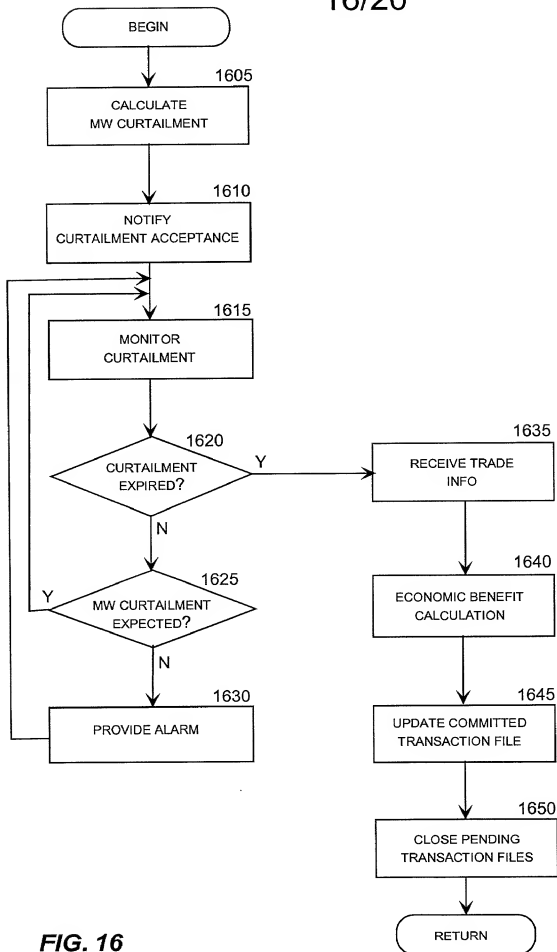


FIG. 16

17/20

1700



FILE	EDIT	VIEW	FAVORITES	TOOLS	HELP
ADDRESS		<input type="text"/> <input type="button" value="Go"/>		<input type="button" value="BACK"/> <input type="button" value="FORWARD"/>	<input type="button" value="REFRESH"/> <input type="button" value="HOME"/>
ISO LOGO		VIRTUAL UTILITY MANAGER			
LOAD CURTAILMENT OPERATIONS		DASHBOARD SUMMARY — 1710			
PRICES DISPLAYED FOR THE DATE: THURSDAY, MAY 10, 2001					
1750 PRICING SUMMARY - HISTORY    ALARM: \$500.00 — 1760					
SYSTEM MESSAGE - SHOW ALL 5/10/2001 8:44 - SYSTEM OK		HOUR:MINUTE:SECOND		ENERGY	TEN-MINUTE NON-SPINNING RESERVE
		08:54:30		\$57.41	\$0.15
		08:49:31		\$65.78	\$0.15
		08:44:30		\$45.00	\$0.15
		08:39:30		\$45.00	\$0.15
		08:34:30		\$45.00	\$0.15
PERFORMANCE TOTALS					
MWH CONTRACTED (YTD) 384					
TODAY YTD					
HOURS PERFORMED 0					
MW PERFORMED 0					
PERFORMANCE MONITOR					
CLASS 1 CONTRACTED (MW)					
28,900					
CLASS 2 0.800					
AVAILABLE (MW)					
CLASS 1 26,850					
CLASS 2 0.400					

FIG. 17

18/20



FILE	EDIT	VIEW	FAVORITES	TOOLS	HELP
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ADDRESS

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LOGO

VIRTUAL UTILITY MANAGER

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NOTIFICATION TYPE  
 CLASS 1 - CURTAILMENT

PROGRAM  
 CLASS 1 MANDATORY NEMA/BOSTON

FACILITIES  
 FIRST CO / MAIN (0.10)  
 SECOND INC/ MILL (0.75)  
 THIRD INC/ SERVICE (22.00)  
 FOURTH CO/ MAIN (2.00)  
 FOURTH CO/ REMOTE (2.00)  
 FIFTH INC (0.30)

1820

1830

1840

CLASS 1 - CURTAILMENT  
 CURTAILMENT DATE  
 START TIME  
 ESTIMATED END TIME

5/25/01  
 12:40  
 23:00

CUSTOM MESSAGE

SUBMIT

1860

1822

1832

TOTAL MW  27.15

1850

FIG. 18

1900

19/20



FILE	EDIT	VIEW	FAVORITES	TOOLS	HELP
ADDRESS <input type="text"/>		<input type="button" value="GO"/> <input type="button" value="BACK"/> <input type="button" value="FORWARD"/> <input type="button" value="STOP"/> <input type="button" value="REFRESH"/> <input type="button" value="HOME"/>			
<div> <div>LOGO</div> <div> <div>VIRTUAL UTILITY MANAGER</div> <div>NOTIFICATION MANAGER 1910</div> </div> </div>		<div> <div> <div>NOTIFICATION TYPE</div> <div>CLASS 2 - FORECAST \$100 ECP <input type="button" value="v"/></div> </div> <div> <div>PROGRAM</div> <div>CLASS 2 VOLUNTARY NEMA/BOSTON <input type="button" value="v"/></div> </div> <div> <div>FACILITIES</div> <div> A CO / MAIN (0.10)  B INC / MILL (0.20)  C1 INC / MAIN (0.10)  C2 INC / MAIN (0.10)  D CORP / MAIN (0.10)  E INC (0.20) </div> </div> </div>			
<div> <div>1920</div> <div>1930</div> <div>1940</div> </div>		<div> <div> <div>CLASS 2 - VOLUNTARY</div> <div> CURTAILMENT DATE <input type="text" value="5/25/01"/>  START TIME <input type="text" value="12:48"/>  ESTIMATED END TIME <input type="text" value="23:00"/>  RESPOND TIME <input type="text" value="12:45"/> </div> </div> <div> <div>1950</div> <div>CUSTOM MESSAGE</div> <div><input type="button" value="SUBMIT"/> 1955</div> </div> </div>			
		<div> <div>TOTAL MW <input type="text" value="0.8"/> 1942</div> </div>			

2000

20/20



FILE	EDIT	VIEW	FAVORITES	TOOLS	HELP
ADDRESS <input type="text"/>		<input type="button" value="GO"/> <input type="button" value="BACK"/> <input type="button" value="FORWARD"/> <input type="button" value="STOP"/> <input type="button" value="REFRESH"/> <input type="button" value="HOME"/>			
LOGO		VIRTUAL UTILITY MANAGER			
		NOTIFICATION MANAGER 2010			
2020 <input type="text"/>		NOTIFICATION TYPE <input type="text" value="CLASS 1 - RESTORATION"/>			
2030 <input type="text"/>		PROGRAM <input type="text" value="CLASS 1 RESTORATION NEMA/BOSTON"/>			
2040 <input type="text"/>		FACILITIES FIRST CO / MAIN (0.10) SECOND INC/ MILL (0.75) THIRD INC/ SERVICE (22.00) FOURTH CO/ MAIN (2.00) FOURTH CO/ REMOTE (2.00) FIFTH INC (0.30)			
		CURTAILMENT <input type="text" value="EVENT #262 - CLASS 1 MANDATORY - 05/25/01"/>			
		NEW END TIME <input type="text" value="16:00"/>			
		CUSTOM MESSAGE <input type="text"/>			
		SUBMIT <input type="text" value="2055"/>			
		2050			
		TOTAL MW <input type="text" value="27.15"/> 2045			